ABSTRACT OF THE DISCLOSURE

Several novel polyimide materials are disclosed.

One example is apolyimide material comprising

heterocyclic polyimide having an unit represented by

the following general formula (1):

5

$$- \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 0 \\ 1 \\ 0 \end{array} \right)}_{0} N - \Psi_{1} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \cdots + \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{\hspace{-1.5cm} \left(\begin{array}{c} 1 \\ 1 \end{array} \right)}_{n} - \underbrace{$$

(wherein Φ_1 s may be the same or different and are individually a quadrivalent organic group, the Φ_1 s including at least 0.2 molar equivalent of a quadrivalent hetrocyclic group selected from the following Group (a), Ψ_1 s may be the same or different and are individually a bivalent organic group, and n is a positive integer).